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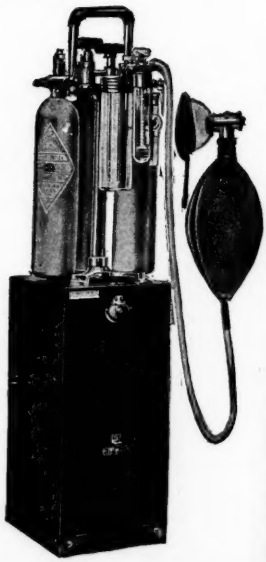

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ORIGINAL ARTICLES

OBSTETRIC SHOCK.*

By Albert H. Miller, M.D.
Providence, R. I.

A Case of Pure Shock.

While sailing across the Gulf of Mexico, our ship encountered a tropical thunder shower. There was a tremendous downfall of rain with vivid lightning flashes and a continuous rattle of thunder. After the storm seemed to be over, there was a sudden flash of lightning and a tremendous thunder crash. When we had collected our senses we saw that something was wrong with the captain. He had been standing opposite the door of his cabin with his shoulder resting against one of the forward halyards, talking with the mate. Now he would have fallen if the mate had not supported him. A few minutes later he had become unconscious. We carried him into his cabin and laid him on a cot with his head lowered. His color was ashy, his skin cold and moist, his eyes open, with fixed eyeballs and dilated pupils. His muscles were relaxed. The pulse and apex beat were imperceptible. The respiration was shallow, halting, and steadily failing. The condition seemed desperate. We had more than a passing interest in his recovery because we knew that he was the only one on board who was competent to navigate the ship into port.

We kept the patient's head low, gave a hypodermic of strychnine, applied ammonia on a cloth held to the nostrils and did artificial respiration. After ten minutes the respiration was re-established and soon there were signs of returning consciousness. There was a profuse perspiration which drenched his clothing. In an hour he could take nourishment and after six hours he brought the ship safely into port. Although the shoulder of his coat was burned, the captain showed no sign of physical injury.

This seemed to be a typical case of pure shock. Such cases occurred during the war among men who were knocked down but not otherwise injured by an explosion. Many of the patients recovered. Some of them died.

Wound Shock.

Our knowledge of wound shock was greatly increased through the work of the Medical Research Committee of Great Britain as reported by Dr. W. B. Cannon and his associates. Wound shock results from severe injuries: penetrating wounds of the skull, perforating wounds of hollow abdominal viscera, large open wounds of the chest, compound fractures of the extremities, or multiple wounds of the body and extremities. The signs are pallor or cyanosis, perspiration, a rapid pulse, shallow respiration, a low blood pressure, and diminished nervous sensibility. The patients suffering from wound shock are particularly susceptible to the action of anesthetics and to changes in posture. Some who have arrived at casualty clearing stations with severe wounds but in good general condition have developed the signs of shock as soon as an anesthetic was administered. Many have died when moved from the dorsal to the prone position.

Surgical Shock.

The severe traumas which are responsible for wound shock are rarely encountered during surgical operations. Nevertheless, surgical shock occurs quite frequently and sometimes accompanies trivial operations. A simple curettage or a tonsillectomy may be followed by typical signs of shock seriously complicating the recovery. In these cases the condition is mechanical, with two factors of causation: relaxation from anesthesia and posture. The abdominal veins are distensible and depend upon intra-abdominal pressure to maintain the flow of blood through them to the heart. The systemic capillaries are also distensible and with the relaxation of profound anesthesia may dilate to four times their usual capacity. When the abdominal muscles are relaxed by anesthesia and intra-abdominal pressure is reduced or lost and when the capillaries are also relaxed

*Read before the Providence Medical Association June 4th, 1923.

and distended, the influence of gravity on the return circulation becomes of prime importance. An anesthetized patient who is doing perfectly well in the dorsal position may rapidly develop signs of shock when the head of the table is raised. Quite frequently patients are plunged into shock by the post-operative use of the Fowler position. I have seen a patient who was in satisfactory condition after breast amputation, die immediately after the body was lifted to a sitting position for the application of the bandage. In these cases there is a balance between the degree of relaxation from anesthesia and the dependence on gravity for the return circulation. If this balance is disturbed, signs of shock are likely to follow.

Importance of Blood Pressure.

In determining the presence of shock and in estimating its severity, a knowledge of the blood pressure is invaluable. Routine blood pressure tests during all operations and during labor are important to accustom the observer to normal conditions and to give early warning of conditions of depression in the cases where they occur. When the systolic pressure is lowered to 80 m.m. with a pulse pressure of 20 m.m. or less and a pulse of 120, shock has developed and prompt measures must be taken if the patient's life is to be saved. If the lowered blood pressure persists for any length of time the nutrition of the heart muscle becomes so impaired that recovery is impossible and death from cardiac failure ensues within a few days. In obstetrical cases we expect to find an increase in blood pressure during the second stage of labor with a further increase during each pain, the highest point being reached during the delivery of the head. These conditions may be modified by unusual factors present in some cases as the exhaustion of a protracted labor or the presence of unusual hemorrhage. After the delivery of the child and the placenta, the blood pressure is regularly somewhat lower than normal.

Obstetric Shock.

The text books refer to shock resulting from the strain of labor in weakened patients, from accidents of parturition, or from forcible efforts to expel the placenta. Obstetric shock may also occur in strong, healthy women and in cases where the circumstances of the delivery do not explain the occurrence of the resulting depression. The labor may have been protracted and has been termnated rapidly, perhaps with the aid of instruments. There has been no excessive loss of blood. Immediately after delivery the patient is apparently in perfectly normal condition. She has been in the lithotomy position during delivery. An anesthetic has been used at intervals during the labor and to produce unconsciousness and relaxation during the delivery of the head. The degree of anesthesia has not been deep and now the patient is rapidly regaining consciousness. She is moved about in bed, placed in the dorsal position with the head on pillows, and may be turned from side to side while the soiled bed is changed. Now develops one of the most alarming complications ever met with in practice. There is extreme pallor of the skin and mucus membranes. The eyes are closed, the conjunctiva is blanched. The respiration is shallow and almost imperceptible. The pulse is weak and may be unobtainable. The blood pressure is low and may be impossible to determine. Consciousness is depressed. There may be air hunger and some expression of anxiety on the part of the patient. The skin is at first dry but later may be bathed in perspiration. The patient lies quietly on her back with entire absence of color in the face and lips, with no perceptible respiratory movement and with no radial pulse. She seems unconsious but rouses when spoken to. Muret describes this form of shock as a condition which resembles a large hemorrhage but occurring without excessive hemorrhage.

Under these circumstances our ideas of the theory of shock are not so clear as at the present moment. We must remember, however, that we have to deal with a mechanical problem with two factors — relaxation and posture. The abdominal muscles have been relaxed with an anesthetic. The uterus has been emptied rather suddenly, contributing to a further drop in the intra-abdominal pressure. The patient has been for some time in the lithotomy position. Then she has been lowered to the dorsal position, moved about in bed and her head raised on pillows. As a result the entire mass of blood is steadily accumulating in the dilated capillaries and in the abdominal veins.

To counteract this statis and insure a return of the venous blood to the heart, we must make use of the influence of gravity. Time spent in pre-

paring hypodermics and saline solution is time wasted. Leave the patient in the dorsal position with no pillow. Raise the foot of the bed 18 inches and support it on a chair. Soon the force of gravity has its effect, the venous blood begins to return to the heart and the patient shows signs of improvement. The color improves. The pulse returns. Respiration becomes deeper. The blood pressure is raised beyond the danger limit. Convalescence may be somewhat retarded by the incident but is not markedly delayed.

The occurrence of obstetric shock could probably be prevented by immediately placing the patient who had undergone a rapid or instrumental delivery in the dorsal position without a pillow and with the foot of the bed elevated. As the relaxation from anesthesia also enters into the causation of obstetric shock, the selection and administration of the anesthetic must be considered. In a remarkable paper on "Blood-Pressure," read before the Rhode Island Medical Society sixteen years ago, Dr. Robert F. Noyes stated that "the safety of chloroform in labor, as far as syncope and low blood pressure is concerned, has been recognized by all obstetricians. The sphygmomanometer again has demonstrated that labor pains and obstetrical operations during labor and muscular contraction increase arterial tension which the depressing effect of chloroform does not overcome. It is also a matter of common knowledge that when the labor is ended and the uterus is no longer the seat of activity, the blood pressure is diminished and chloroform becomes less safe." He also decided that "if chloroform is the anesthetic employed in an operation, it should be abandoned and ether substituted if the sphygmomanometer indicates too low arterial tension." Increased experience leads us to the opinion that chloroform, having been proved to be an intrinsically dangerous agent, should never be used in obstetrics. Nitrous-oxide-oxgyen is the anesthetic of choice. When administered intermittently through the second stage of labor it relieves pain without diminishing the force or frequency of the contractions. In some instances, when the physical suffering has an inhibitary effect on the contractions, nitrous-oxide-oxygen analgesia by diminishing the suffering has the effect of stimulating contractions and actually shortens the time of labor. In many cases, nitrous-oxide-oxygen is a sufficient anesthetic for the actual delivery. In these cases it appears that tears of the perineum occur less frequently than in the cases where the relaxation from ether is employed. In explanation it is suggested that the loss of muscle tone accompanying relaxation may contribute to the causation of perineal tears. In caesarian section, nitrous-oxide-oxygen is chosen in order to avoid the anesthetic effect upon the child. The babies who are born under nitrous-oxide-oxygen rarely require the efforts at resuscitation so carefully prepared for when a caesarean operation is done under ether anesthesia. When ether is required to produce relaxation for delivery, we must keep in mind the dangers of excessive relaxation and administer the smallest possible amount of the anesthetic. It is in the cases in which a relaxing anesthetic has been employed that the danger of obstetric shock must be kept in mind and guarded against.

DISCUSSION OF PAPER ON "OBSTETRIC SHOCK."

DR. CARVER: Mr. President, I have been very glad to hear this very interesting paper by Dr. Miller. I am sorry that I have never been able to estimate the shock in my experience in obstetrics. There is a great deal of talk about the importance of relieving or diminishing the amount of suffering and shock. There has also been a great deal of talk about the shock of labor and to relieve that by eliminating the second stage by doing version in every case where we could get at it, with the idea of diminishing the amount of suffering and shock. Dr. Lee of Chicago, as soon as he entered the second stage of labor, applied the forceps to eliminate the second stage. The majority in the profession do not follow the teaching of Dr. Lee.

It seems to me that the amount of shock in labor has been very much overestimated. Normally, women do not show very much shock after labor, and evidence of shock disappears. It depends a great deal upon the peculiarities of the woman. A woman who is muscular and accustomed to a laborious life shows hardly any trouble, and such a woman three or four hours after delivery will go down cellar and build a fire and wash out dirty clothes with no evidence of shock.

On the other hand, a woman who is frail, with light muscular development and nervous temperament, will show more shock, but as a rule in normal cases will not show much shock and will recover from it in a very short time. I think it is being overestimated, the importance of the shock after labor. I think you get more discomfort, more disability, from ether than you do from a completed normal labor a woman may suffer, that is, to a degree. There will be a good deal of disability and discomfort for quite a while afterward.

Oxygen, I believe, is a very useful thing. It diminishes a great deal of suffering, and sometimes on the other hand, where there are rigid subjects, a nervous woman relaxes; and that holds good also with ether and chloroform, given by filtering by degrees.

I wish that the doctor could have shown us some normal labor and ordinary average normal labor and shown us something of the shock.

Dr. Partridge: I think Dr. Miller has done us a real service in showing us some real active work. Shock is a very rare thing in obstetrics. The only cases of shock which I have seen were cases of ruptured uterus and of hemorrhage. I have never felt much worried about simple forceps delivery. There is very little more danger than in any other way. There are two cases which I have seen. One was sent to the hospital after labor of seven days, practically pulseless, and died on the table. The other case was in the last service I had. She was pulseless and her heart could not be heard. Delivery was an extremely difficult one, and she died. These are the only cases I have had who died purely from shock, and I have seen a great many cases.

The treatments that Dr. Miller has spoken of are those most of us use today. We always elevate the foot of the bed.

As I said in the beginning, my experience with shock has been very slight, and I was glad Dr. Carver said the same thing. I thank Dr. Miller.

Dr. Appleton: We have all enjoyed Dr. Miller's paper very much. There is one thing about hearing Dr. Miller, and that is, we always learn something.

There is a great discrepancy in clinical shock. It is a very fine shock analysis which Dr. Miller has brought out. One reason is that Dr. Miller discovered it before we did.

One other point is for careful study tonight. In any delivery, prolonged delivery, almost routine treatment would be to elevate the foot of the bed. I would like to ask Dr. Miller if it would not be wise to raise the foot of the bed in all difficult or operable delivery.

I am prejudiced much in favor of nitrous oxide in obstetrics. One point in connection is where nitrous oxide and oxygen are available for treatment in situations immediately after delivery. I have been interested in the last year especially in the use of oxygen just as the head is born until the time when the umbilical cord is cut. I think mothers recover quickly when they get oxygen immediately after delivery. I generally put it into the mother as soon as the head comes, before it really is born. I have used it in thirty or forty cases where there have been no failures; all of that number had to be resuscitated by various methods. I think oxygen gives a very spectacular result. It is of no value after the cord is cut, as it stops the pulse. The use of oxygen to the mother is a treatment beneficial to the child, and clinically it seems to me that it has been a great benefit to the mothers.

Dr. Leonard: It seems to me that it is a very interesting paper by Dr. Miller. He has emphasized his part of the work and has attended to that thoroughly. He omitted, however, to emphasize the physician's duty of following up the delivery, of seeing that the uterus remains intact. He has not gone into our part of the business. That, I feel, is one of the most important things. I have seen the nearest cases to shock in following up the contraction of the uterus.

About the only anesthetic I remember that Dr. J. J. Wiggin used was chloroform. He would put a teaspoonful or more before the patient and go ahead with the forceps. I have not followed that, but have followed the plan of Dr. Potter of New York, who advises us to have some on a handkerchief and have the patient hold it before her face as pain comes on, and before she would come under the influence of it she would drop it and the worst would be over. On one occasion he was called out quite a distance from his home to attend a woman in confinement. They had no trained nurse and no one in attendance only those in the family. He attended the patient and she got well.

Speaking of that, there is a particular reason for my rising here. I want to speak a word for my friend, Dr. Morgan, who has been ill for three years. He had a very thorough course in preparation for his profession, and was an interne at the Rhode Island Hospital, and also at the City Hospital, before he graduated. He went abroad finally and brought back quite a set of obstetric instruments, bone forceps, bone trephine, perforator and some of the other things. Those are at his office. He is obliged to move very soon, and it would be of advantage to him and to any of the Fellows if they desire to see and obtain any of these instruments if they would call on him at his home, 74 Franklin Street. He is still doing a little work, but does not go out and does not see his patients. He has a very good operating table that he would dispose of. He has given his books to the City Library, and those on skin diseases to the Rhode Island Hospital. Some of his instruments he has given away. I think some of the specialists would like to see and perhaps obtain some of those instruments.

Dr. Noyes: There are a few points in connection with the subject that I would like to ask Dr. Miller's opinion about, and hope that he will refer to them in closing the discussion. In the first place, we notice that in all these cases that are shown by the chart, the pulse was much increased and he referred to that in connection with his talk. I would like to ask him if it is possible to have a slow pulse in connection with shock. We have seen a good many cases at the Lying-In Hospital after delivery who had bled more than normally, but yet it would seem that they had not bled enough to account for their apparent condition, pallor and weak pulse. Are they cases of shock, or hemorrhage, or a combination of both? We see a good many patients during pregnancy who run a low systolic blood pressure, of 90 or perhaps lower. Are these patients, if they come to operative delivery, any more likely to suffer from obstetric shock, or are they less likely than the cases which have moderate elevation blood pressure? The first chart of obstetric blood pressure was 60, and that was about the worst case of obstetric shock he showed. It seems to me that we have seen a number of cases at the hospital of moderate shock following delivery in the cases, as Dr. Partridge said. Then the cases of the charts that Dr. Miller showed; I wondered if in any of those cases there was any question of more than the usual amount of bleeding. I presume that there was not, or he would have referred to it. And in the treatment, I wondered if there was a question of less intra-abdominal pressure leading to the change in position which Dr. Miller mentioned; if he used a tight binder or sand bags on abdomen, would it not be an additional advantage?

Dr. Jones: I think that we are indebted to Dr. Miller for bringing out an explanation of a condition which probably we have all recognized clinically but which we have not gone into and really worked out scientifically, as Dr. Miller has. We see this condition in surgical work, which I think is very similar to the shock he described in obstetric work. One woman, on whom I had done an hysterectomy, suffered an excessive loss of blood and four hours afterward went into shock, and her picture was just such as Dr. Miller has described in some of his observations. I used saline and had the foot of the bed elevated, and she immediately began to come back. I think that in her case the loss of blood which occurred was perhaps more than in an ordinary patient, although not a great loss of blood. I think that element comes in with your obstetric work. There are two features: loss of blood and the position of the patient following delivery or surgical operation. I think that, as Dr. Miller has said, the blood being in the extremities, in the legs, in the abdominal chamber, is the big point. As soon as that is rectified, I think stimulants are much less value than we have thought in the past.

Dr. Fulton: I would like to ask Dr. Miller just a little about the effect of adrenalin. As I recall one of the cases, he administered adrenalin along with saline, with rapid drop. There has been a great deal written lately about the intracardiac injection in cardiac standstill, and where the heart has been caused to begin to beat again after it has completely stopped. How much Dr. Miller has used adrenalin in these cases, and how often it can be repeated. It seems as though intracardiac injection is of value in some of these cases.

Dr. Chase: There is one thing in the treatment of shock that has not been stressed at all. That is heat. About any time you walk into a hos-

pital you see cases where a patient is lying about in wet clothes. In the army, American hospitals were equipped with shock cabinets, which were cabinets superheated. Patients were placed in them and kept very warm indeed. Undoubtedly, the three main elements to be considered are posture, fluids and heat. I think heat is undoubtedly not stressed enough.

Dr. Miller: In regard to the continued use of adrenalin that Dr. Fulton spoke of. I do not think that in any case I have used adrenalin in more than two doses of more than 1/10 of a grain at an interval of ten to twenty minutes. In those cases it has always had a prompt result, and shock has passed away very quickly, and from what I have seen of adrenalin that is the experience in general. In one case in which a child had been dead for a period of something like eight minutes, artificial respiration was done, and a saline solution introduced into a vein. To this saline solution was added adrenalin by puncturing with a hypodermic needle. By repeated doses of adrenalin the child was kept breathing and alive for eight or ten hours, but the child could not be kept alive permanently. I think it would be very interesting to try repeated doses of adrenalin; but as far as two doses go, it has no lasting effects in any of the cases I have seen.

In regard to the patients with a low blood pressure and a slow pulse. We run across that condition very often among the surgical cases, particularly among old people. We find a good many old people who approach operation with a low blood pressure and slow pulse, and as operation goes on their pulse is liable to become slower and the blood pressure perhaps a little lower than it has been at the start. They are not in a condition of shock and not in a dangerous condition. In fact, if you gave them an ordinary hypodermic of strychnine you would get an increase of blood pressure and in heart rate. They are not in a condition of shock according to the definition. A patient who had a systolic pressure of 80 and a diastolic pressure of 60 and a pulse of under 120 would not be in a condition of shock. The patient might be in a depressed condition but it could not be the condition which we call shock, and which would be fatal if condition were allowed to go on for twenty minutes or more.

About the amount of bleeding in the cases I had on the screen, there was not one of excessive bleeding in any of those cases. They corresponded very closely to that definition I mentioned before as being the best description of this condition I have ever seen. It fits these cases perfectly. "A condition which resembles an excessive hemorrhage, but no excessive hemorrhage." None of these cases had excessive bleeding. I do not expect to see many more of them. It just happened that I ran across them in my practice of three years. It is a very unusual thing.

I think it would be a good idea to put a tight bandage around the abdomen, although it has been found in practice and proved very conclusively that the old idea of bandaging extremities for shock is of no use.

Strychnine increases blood pressure very quickly. In shock it does not do anything at all. Blood pressure is not elevated by strychnine and is not elevated by saline solution intravenously. In a case of shock, the more saline you put in, the worse the patient is off. What effect does strychnine have? I do not know exactly, but in patients who have a combination of low blood pressure and slow pulse it quickens the pulse and increases the blood pressure. In cases of rapid pulse and low blood pressure strychnine does not have any effect in the blood pressure. It is a very interesting thing to have a patient who has a low blood pressure with slow pulse. In those cases we get a pulse in the fifties quite often with low blood pressure which would frighten us if we did not know that the pulse is slow. Those cases do not correspond with the definition of shock. Those patients go through and recover without any trouble. That they have slow pulse does not seem to affect them at all.

Vitamines Not A Cure-All.

The present popular tendency to extol vitamines as a cure-all may be drawing to a close. The U. S. Public Health Service reports that efforts during the year to discover the unidentified food substance whose absence from the diet causes pellagra have excluded two of the three known vitamines. The search for the missing element is being steadily narrowed.

CHINA'S CONTRIBUTIONS TO MEDICINE.*

By Dr. E. H. Hume.
Dean of the College of Medicine of Yale in China.

Source of Information.

Knowledge of Chinese medicine is secured from folk lore, every citizen having a considerable fund of information about the principles of medicine as understood in China: from the standard medical books, which number legion; from the general histories; from a study of the Chinese Ideographs, many of which illustrate the transition from an era of magic to a period of standardized practice; and from the observations of travellers.

Varieties of Medical Practice. While the common opinion is that Chinese medicine consists of charms, incantations, magic, manipulations, disfiguring plasters, etc., the facts are that there is both a quack practice and a rational practice, the picture resembling that of Europe in the Sixteenth Century.

The Development of Medical Practice. Chinese medical records start from a period said to commence at 2800 B. C., when the great Emperor Shen Nung devoted a portion of each day to the tasting of herbs. He was followed by the Emperor Huang Ti, who is said to be the author of the "Canon of Internal Medicine." Even though this work was not composed before 1000 B. C., the fact remains that China has had a systematic medical literature for at least three thousand years. Unfortunately the picture has frequently been clouded by mysticism and empiricism. There developed very early a dual philosophy of the universe, it being taught that on the one hand was the positive influence, represented by heaven, day, heat, etc., and on the other, the negative, by earth, night, cold, etc.

Positive Contributions to Medicine. Two things stand out as worthy contributions. The first is systematic physical diagnosis. From the earliest days the trained physician in China has been taught four steps—"Look—Listen—Ask—Examine." When these four words were explained, they proved to be very definite suggestions as to the method of examining patients. Under the word "examine" there has come down to us a most elaborate study of the taking of the pulse. Here again theorizing caused error, for it was taught that the heart, the liver, and the kidney were joined by direct channels to the left wrist, while other organs were similarly connected with the right wrist. Taking of the pulse, therefore, meant getting direct evidence from the organs supposed to have such connections.

The other contribution was in the realm of botany. Three hundred and eighteen listed herbs are described in the materia medica, and there is no question as to the efficacy of many of these. The Chinese have potent cathartics, diuretics, etc., whose value will become known to us in increasing measure by the methods of scientific investigation.

Knowledge of Surgery and Physiology. In the "Canon of Medicine," written not later than 1000 B. C., we find the following: "All the blood is under the jurisdiction of the heart. The twelve blood vessels are deeply hidden between the muscles and cannot be seen. Only those on the outer ankles are visible, because there is nothing to cover it in these places. All other vessels that are on the surface of the body are veins. The harmful effects of wind and rain enter the system first through the skin. It is there conveyed to the capillaries. When these are full it goes to the veins, and these in turn empty into the arteries. The blood current flows continuously in a circle and never stops." This description of the circulation of the blood antedates Harvey by about two thousand years.

About two hundred years after the time of Christ, there lived Hun To, the most famous surgeon of China. He administered to his patients an effervescing powder in wine, and produced complete unconsciousness. This enabled him to perform many operations, including venesection, excision of the spleen, etc. He offered to cure the headaches of his royal patron, King Tso, by opening the skull under hashish. He was arrested for this impudence, and ordered to be killed. Just before his death he offered all his manuscripts to the jail keeper, who dared not receive them, whereupon Hun To burned his papers, and only a few leaves were recovered from the ashes, the description of castration being one of the operations described in the recovered papers.

Modern Opportunities. The era of modern medicine began early in the nineteenth century, when an English physician, Dr. Colledge, went to

*Read before the Providence Medical Association May 7, 1923.

South China with the East India Company, and early established a reputation for his medical skill and personal benevolence. In 1835 he was joined by Peter Parker, the first medical missionary to China. On the foundation laid by these men there has gradually been built up increasing confidence in the methods of western medicine, until today there are dotted over China well over four hundred hospitals, the majority of these being under medical missionaries. There are in addition a few centers where scientific medical education is being given, the most important being as follows:

1. Peking Union Medical College, owned and operated by the Rockefeller Foundation. Here are to be found the most complete plant and the largest staff in Asia.

2. The Medical School of St. John's University at Shanghai. To this institution a certain amount of support is given by the graduates of the University of Pennsylvania.

3. The Medical School of Hongkong University. This school is operated according to British standards, and is rapidly developing a very strong staff, and building up modern equipment.

4. The Hunan-Yale College of Medicine at Changsha. Here there exists a unique cooperation between representative educators of the Province of Hunan and the staff of the College of Yale in China, each party contributing funds towards buildings and upkeep, and the local management being under a joint board of Chinese and Westerners.

5. The Medical School of Shantung Christian University at Tsinan. Whereas the first four schools teach entirely in English, the instruction in this school is given in Chinese, with the provision that the students must learn to use English books and journals, so as to be able to use medical literature after graduation.

In addition to these five schools, there are several government schools, which are increasing in strength each year, although they have not yet placed themselves squarely upon modern university standards of medical teaching.

The opportunity for teaching, for practice, for research into unusual diseases, makes the field in China particularly alluring today.

Who's Efficient Now?

Uncle Sam may owe arsphenamine (salvarsan) to Germany, but he has improved it a lot since he took over its manufacture some years ago. Today, says the U. S. Public Health Service, it and its fellows pass tests that are twice as rigid, which means that the drugs themselves are twice as safe as they ever were before.

Mosquito Control.

Co-operative anti-mosquito work in 45 towns situated in 10 Southern states has cut down their malaria rate by 75 to 90 per cent., says the U. S. Public Health Service. It saved its cost several times (in one town eight times) in doctor's bills, medicine bills and lost wages, all of which are items that are positive and ascertainable.

Don't Infect Mosquitoes.

Commenting on printed reports on mosquito control in such diverse countries as Spain and the Dutch East Indies, the U. S. Public Health Service calls attention to the fact that the government authorities who are trying to free a certain region in Spain of malaria refuse to allow sufferers from that disease to remain in the region over night lest they infect the malaria-bearing mosquitoes, which feed only at night. Few white people live in the region; and most of the sufferers come from considerable distances and seem to have contracted malaria while working there in previous years. Their blood is examined and they are provided with sufficient quinine to last them for two weeks and are told to go home at once and to report back at the end of that period for another two weeks' supply.

The theory is, of course, that if mosquitoes cannot find a malaria patient to bite they cannot acquire malaria germs and therefore cannot pass them on to well persons. In other words, if men do not infect mosquitoes, mosquitoes will not infect men.

Incidentally, the Service notes that the American minnows, Gambusia affinis, are being imported into Spain and Italy to help in mosquito eradication.

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EDITORIALS

THE USE OF THE OPHTHALMOSCOPE.

When the great physicist von Helmholtz invented the ophthalmoscope, he placed in the hands of the physician an instrument which was to prove no less valuable than the stethoscope of Laennec; for as the latter amplified both the range and the precision of the ear, so the former in a very literal sense made the darkness visible. From a craft of mere empiricism and sagacity, confined for the most part to superficial observations, ophthalmology became after the introduction of the ophthalmoscope, a study of deeper affinities pursued in a truly scientific spirit. One can well appreciate the feeling of exaltation with which Albrecht von Graefe saw, for the first time in his notable career, the retina of a living patient. And what emotions must have stirred within him when in 1859 he first made the brilliant diagnosis of embolism of the retinal artery as being the pathological condition in a case of sudden blindness, and then went on to dispel contemporary ignorance by showing that most cases of blindness and impaired vision associated with cerebral disorders were owing to optic neuritis rather than to paralysis of the optic nerve as had been the common belief before his time!

In Holland that gifted polylinguist Donders, while waiting for one of Helmholtz's ophthalmoscopes, turned his impatience to good use by contriving one for himself, in which a silvered mirror with central perforation was substituted for the superimposed glass plates of the Berlin master. A little later in Leeds, the youthful Dr. Clifford Allbutt, then as now *facile princeps* in clinical medicine, was busy with the ophthalmoscope and was collecting the material for his hand-book of opthalmology published in 1871. Hughlings Jackson was at work in London with Jonathan Hutchinson as associate and William Gowers as disciple, doing, all of them, pioneer work of the first quality. Hughlings Jackson used to remark that he considered it the most fortunate thing in his whole medical career to have begun the studies of his profession in an eye hospital; and he never wearied of inculcating in the minds of his younger colleagues the important services which ophthalmology can render to general medicine. In America, Weir Mitchell and many others who witnessed the birth of the ophthalmoscope paid their tribute of praise to the great services it was rendering the physician. In our own day, to praise the ophthalmoscope were to indulge in the painting of lilies.

And yet we can all bear witness to the curious paradox that whereas every physician uses his stethoscope daily and would feel lost without it, few physicians own and employ the ophthalmoscope. But, if one stops seriously to reflect upon it, what a great pity this is, for where, except in the eye, can one view directly a nerve, an artery, a vein and a nerve expansion? Inside the eye—a veritable microcosm contained within the macrocosm of the body, Nature presents for us, if only we will but look and see, the fair picture of health and the tragic delineations of disease. The fury of local storms we may study as well as the wreckage borne in upon the tides of more general disturbances, for the eye has perhaps more pathological sympathy than any other organ of the body. If you would know whether a persistent headache is meningeal, perhaps syphilitic in origin, examine the choroid for evidence of past or present inflammation, because the pia mater is the choroid of the brain. If some obscure cerebral disturbance is caused by a tumor, the ophthalmoscope may disclose an optic neuritis and decide the issue as between functional and organic mischief. Looking through this small window of a pupil one can see the local tissue changes which are part of more widely scattered degradations elsewhere throughout the body; thus do diabetes and nephritis and lead give evidence of their presence. The arteries too are here visible in their health as well as in their decay, giving timely warning of approaching, but possibly preventable disaster. When Wassermanns are negative and symptoms perplexing, the presence of optic therapy may clarify for us the real significance of certain "rheumatic" pains in the arms or legs. And so we might go on enumerating many more of the helps which the ophthalmoscope is prodigal in giving to general medicine. Nothing we have said is news to any physician, and yet there is a very notable neglect of ophthalmoscopy. It is strange, to say the least of it, that we who are so anxious for exact knowledge based upon the data of observation, should cultivate our senses of touch and hearing by the use of percussion, palpation and auscultation, while we neglect or almost neglect, to extend and refine our knowledge by the ophthalmoscopic use of our eyes.

RECORDS.

The first rule that is learned by the student of laboratory and research medicine is this:—"Promptly record all observations that you make." There are those among the profession who are fortunate enough to possess brains of the card catalogue variety who can with ease and a great degree of accuracy recall the details of observations made days, weeks and months before. But even among men of such unusual faculties the written record is of value—for at best attempts to recall facts by the memory are bound to result in minor and at times major inaccuracies and in a subtle smoothing off the corners of truth which makes them fit together to conform easily to any preconceived notion or "hunch" that happens to dominate the mind of the observer. This destroys the value of the observation.

The JOURNAL is closely in touch with the "average practitioner" in Rhode Island and accords him a great degree of whole-hearted respect. The feeling, however, cannot be escaped that this man in the rush of his daily work is failing accurately

to record and preserve observations which might be made of the greatest value. Sir James MacKenzie clearly pointed out the opportunity of the general practitioner in making great advances in medical knowledge by carefully made, *and carefully recorded,* clinical studies of patients over long periods of time. If a man can afford an expensive make of automobile or the services of a chauffeur for his daily work, he at least should be able to hire a secretary whose chief duty it is to prepare, file and catalogue his records so that the clinical data which he collects and on which his experience as a practitioner is based, can be preserved and made available to the profession and thus valuable to the public.

WHO PROFITS BY STRIKES?

Though it is somewhat outside the pale of common usage to indulge in any discussion not within the realm of medical association, still we must always bear in mind that we were men and community factors before we became physicians, and we cannot, as physicians or citizens, overlook or ignore the activities of any public utility as having no bearing upon the well-being of a community or as not having a distinct association with our professional usefulness.

The telephone strike is fortunately at an end; whatever politics may have influenced its inception, the results have, as in most strikes, been disastrous.

There is hardly a hamlet in the country that in these days may claim isolation; the automobile and the telephone are two of the principal agencies that have disturbed this one-time seclusion. No movement of any pretension can take place therefore, without finding a general echo; every trade and every profession must be affected in some degree; the profession of the practice of medicine is part of the general scheme and should shake itself out of its undesirable aloofness and accept the responsibilities that the rapid strides of recent years have thrown upon it, by assuming a definite stand upon civic affairs that have bearing upon the health of our people, whether this disturbance be one of communication, of transportation of food, coal or any other great necessity.

Arden, Del., Jan. 31, 1923.

EDITOR "THE RHODE ISLAND MEDICAL JOURNAL,"

Dear Doctor: Enclosed is an article which I would like to ask you to publish, if the space of the JOURNAL permits. I am daughter of the late Dr. L. F. C. Garvin, for many years member of your Society, and my mother was also a practicing physician. While not a physician myself, I had instruction from both along hygienic lines and I would like to be of use in calling attention to what seem very important points. While my work keeps me here most of the year, my home is in Rhode Island and I have much interest in progress there.

Yours very sincerely

FLORENCE GARVIN

REST AND FAST.

BY FLORENCE GARVIN

The first half of this title is not complete without the second half. The muscular system is divided into voluntary and involuntary. If the voluntary muscles of the limbs and back require rest, the involuntary muscles of the digestive tract also require rest. Fasting in the past has been mostly identified with religious systems, but the religious organizations spread among masses of people and coincident with the powers of government (as, for example, the Roman or Greek Catholic) have rules the object of which was essentially the health of the people. Whether it was necessary in the original preachments to an ignorant people to give superstitious reasons for health rules is not a question important in the present day, but it is important that, in this day of general education, enlightenment as to health be an essential part of public education.

Illness of any description is a sign that the eliminative process necessary to health is not taking place. It is logical therefore that to avoid food is a safe course. So eminent a physician as Doctor Oliver Wendell Holmes said that when tired or faint but not hungry a mild stimulant is safer than food. It is not to be supposed that he was actually recommending stimulants, but of the two alternate courses, the uninstructed person chooses food, and after a hearty evening meal in a fatigued condition, rises the next morning with a cold or

headache and does not know the reason why. Catarrhal conditions affecting eyes, ears, mouth and nose are so chronic with the majority of adults that it takes only one too many meals under unfavorable circumstances to precipitate an acute attack. Fasting tends to loosen the catarrhal condition, benefiting all the outlets of the head. A little experience in this line tends toward conversion.

Another condition that is chronic with the majority of people, whether fat or thin, is a sagging of the muscles of the soft digestive organs, stomach and intestines. Compare the disrobed figure of the average American with the classic Greek statues of Venus or Apollo. Note the tone of the abdominal muscles in the classic statues. No trusses needed on them. The digestive muscles in many people are in an overworked degeneracy comparable with the workworn arm muscles of the washerwoman or manual laborer who has too many hours of labor for her or his good. There is a tenseness combined with a depression in workworn muscles. They have operated too often, and, for relief, there is no substitute for rest and temporary inaction. For over-worked digestive muscles, the advice to rest is often unwelcome to their owner and an increase of quiet and sleep is usually necessary to insure a fast.

The history of religious government is enlightening in the study of hygiene. The insistence upon quiet on the Sabbath, the rule of Puritan government, was a safe rule for nervous health. The insistence upon bathing in a sacred pool in the early summer among peoples, who, previous to the date of modern plumbing, "sewed up for the winter," was preventive of epidemics. A hibernating people was subject to plagues. The reduction of food during Lent, the six weeks of the transition from winter to summer, is of internal housecleaning value and is similar in virtue to the cleaning of the house, which the housewife considers her duty in the spring.

It is not claimed that any form of religious government has said the last word upon hygiene, but their influence has been widespread and authoritative with the people and scientific hygiene needs to look into the history of church rules that have met the needs of millions in a rough way and find out their hygienic value. While the authority of the priest or spiritual adviser has for many centuries been gradually declining with the increase of popular education, the authority of the medical profession has been gradually increasing over the same centuries and the confidence of the people brings with it a responsibility for the life and health of the people, and to establish the habits of a nation upon a sound basis is a task which calls for the best and most dignified efforts of the profession. What could be accomplished in this line in a small nation was demonstrated by the ancient Greeks.

It ought not to be satisfactory to the profession to be merely called in when sickness has frightened the individual or the family. A whole survey of the health of the entire nation and their habits as determining their health is none too large an undertaking for the profession, and, unless it is undertaken, there will be no consistent American character, divided as people are religiously into denominations and attracted as they are by varied businesses and sports, but an edict as to the health of the nation should take precedence of any other influence, provided the edict is not arbitrary, but based on a survey of the whole American people, making allowance for the liberty of conscience allowed in Christianity and the inquiring mind produced by popular education. The future of the American people, both as a perfected type and also as an example to other nations, is a matter for serious study.

SOCIETIES

Providence Medical Association.

The regular monthly meeting of the Providence Medical Association was called to order by the President, Dr. William B. Cutts, at 9:10 P. M., May 7, 1923. The records of the last meeting were read and approved.

The Standing Committee having approved the application of Dr. Frank I. Matteo, the Secretary was instructed to cast one ballot for his election.

The President announced the meeting of the N. E. Hospital Association to be held on May 16 and 17. Doctors J. H. Davenport, W. R. White and A. A. Barrows were appointed by the President to present resolutions on the death of Dr. Harold Metcalf.

The address of the evening was given by Dr. E. H. Hume, Dean of the College of Medicine of Yale in China, on "Chinese Medicine, Ancient and Modern." In an interesting manner he told of the ancient medicine of China, which is older than the religions there, and closely associated with the life and folk lore of the people, it lays great stress on its involved methods of physical diagnosis, has a large materia medica and some distinctive physiology, but its surgery is of little value. It is hard to make a start in modern medicine as it conflicts with the thoughts and customs of the Chinese. Dr. Hume then told of the medical schools established by the white races, the finest being that of the Rockefeller Foundation at Peking, $6,000,000 buildings. The Yale school is nine hundred miles up the Yangtee River in a province closed to outsiders until about twenty years ago. Dr. Hume gave an account of the founding and present condition and work of the school, and then showed interesting moving pictures of the trip up the river and scenes about the school. Numerous questions were then answered by the speaker. The meeting extended a rising vote of thanks to Dr. Hume.

Meeting adjourned at 10:30 P. M. Attendance, 84 members, 2 guests. Collation was served.

Respectfully submitted

PETER PINEO CHASE, *Secretary*

MEMORIAL
to
HAROLD METCALF, M.D.

In the Jane Brown Memorial Hospital, on March 3rd of the current year, occurred the death of a physician, a member of this Association since 1888, whose name must be added to the list of those who have been held in the highest esteem and respect by our membership and by a very large circle of friends and patrons.

Dr. Harold Metcalf was born in Providence, November 25, 1860, the son of Levi and Georgianna Metcalf. He entered Brown University from the Classical High School and was graduated with the degree of A.B. in 1884. His graduation in medicine was in 1887 from the Harvard Medical School.

After one year's practice in Providence with office on North Main Street, he removed to Wickford, R. I., and was actively and successfully engaged in the general practice of his profession nearly to the time of his decease. During his first year in Wickford he married Miss Mary A. Barney of Middletown, R. I., by whom he is survived and also by a daughter, Miss Mary, and three sons, George T., John T., and Paul B.

His health was seriously impaired during his last four years of life, but, like very many of our profession, he worked on and on while endurance remained. He was Medical Examiner for North Kingston and Exeter for thirty-three years and took an active part in educational and other public interests of Wickford and surrounding communities, for his practice extended in all directions. He was a constant attendant on our meetings and those of other medical societies, and a member of the American Medical Association.

A physician who knew him well has this to say of him: "I feel that mention should be made of Dr. Metcalf's marked ability as a diagnostician and am confident that in spite of the restrictions of country life and practice he was one of the very best diagnosticians in the state."

Thus in how few words may be outlined a human life, but with Dr. Metcalf how inadequately may words express his life's fullness, its success, its value to his fellow men. Doubtless to most of our younger members Dr. Metcalf was hardly known but by those who knew him best he surely was regarded as one in the first rank of his profession. He came among us in a quiet way, always genial and cheery, seeking no brilliant fame or distinction such as the world sometimes bestows, but true in manhood, of high ideals, loyal, honorable, faithful and unselfish in service, surely he had grown to be both honored and beloved.

In his domestic and parental relations, Dr. Metcalf was most happy. It was the writer's privilege some years ago, for a single evening, night and morning, to be a guest in his home, and the impression then received has since been cherished as a memory both pleasant and inspiring of real home life and happiness.

As we now review the career of Dr. Metcalf, realizing his fine character, his years of patient, generous toil, the splendid service he rendered, may we not use the thoughts once expressed by

another: "He has achieved success who has lived well, laughed often and loved much; who has gained the respect of intelligent men and the love of little children; who has filled his niche and accomplished his task; who has left the world better than he found it. whether by an improved poppy, a perfect poem or a rescued soul; who has never lacked appreciation of earth's beauty or failed to express it; who has always looked for the best in others and given the best he had; whose life was an inspiration; whose memory a benediction."

DR. JAMES H. DAVENPORT
DR. WILLIAM R. WHITE
DR. ALBERT A. BARROWS
Committee.

Providence Medical Association, June 7, 1923.

THE STANDARDIZATION OF BIOLOGICAL STAINS.

On March 2nd at the Chemists Club in New York City, there was held a meeting of the Executive Committee of the Commission on Standardization of Biological Stains. The members of this committee are: H. J. Conn, Geneva; F. B. Mallory, Boston; L. W. Sharp, Ithaca, N. Y.; J. A. Ambler, Washington, D. C.; and S. I. Kornhauser, Louisville, Ky. The meeting was also attended . . . . by J. P. Garvan and W. F. Keohan to represent the Chemical Foundation. The meeting is a matter of interest to everyone in the medical profession.

All physicians realize the need of dyes for staining specimens in the laboratory diagnosis and investigation of disease. It is not perhaps so generally realized that the dyes used for this purpose, in order to give constant results, must be of very precise chemical composition; and yet it is a very difficult matter for either the chemist or the biologist to control their composition. Before the war all stains were imported from a single German firm. This firm did not manufacture stains, but bought textile dyes in batches of considerable size, and after some preliminary testing bottled them and sold them under its own name to the biological laboratories of the world.

When the war broke out the American laboratory was deprived of this foreign source of stains. After the pre-war stocks already on hand had given out, much difficulty was experienced in getting stains of the quality necessary. The Society of American Bacteriologists began an investigation of American-made dyes that were being sold as biological stains. The results of this investigation were so promising that it proved possible to secure the assistance of the National Research Council through whose agency a co-operative investigation was arranged among the members of several national societies. Recently the work has been organized under a special commission independent of the Research Council but still representing the different national societies that were co-operating in the earlier work.

At the executive committee meeting of this commission just held, the very encouraging results of the work were reported. It was shown that already the stains available in America are in practically all cases as good and sometimes better than the best of the pre-war stains. The most important fact brought out at this meeting was that while the pre-war stains were standardized only in an empirical way, by buying large batches without knowing the exact composition of the dye, they must now be standardized on the basis of pure chemicals.

The reason for this is because it is proving that in some cases the impurities present in the pre-war stains were very necessary. Sometimes these impurities were other dyes and sometimes supposedly inert materials like dextrin. In all cases the task plainly before the commission is to find out what the impurity is which was responsible for the good staining qualities of the impure product. Then in the future the users of stains must demand that these impurities be present, not as impurities, but as intentionally added ingredients. When this has been done and the products are labeled and used accordingly, the American stains will become standardized in a true sense of the term.

Very shortly the commission will begin issuing certification of definite batches of stain that it has found satisfactory. These stains will be put on the market under a special label bearing the name of the commission. Users of stains must be on the lookout for products bearing this label.

MISCELLANEOUS

GROUP SUBSCRIPTIONS TO HYGEIA.

At a meeting of the Genesee County Medical Society, Michigan, it was voted to send *Hygeia* to each school in the county. The society forwarded a check for $166 to cover these subscriptions. In addition to the initial subscription of more than 1,200 sent by the Allegheny County Medical Society, a later order for 446 subscriptions was received. These include the heads of charitable organizations, public officials, presidents of women's clubs, educators, clergymen and public libraries. The society offers to increase this amount still further, provided the introductory subscription is left open. Other local societies have also sent in group subscriptions to *Hygeia,* among them, Pierce County, Washington; Cascade County, Montana; Genessee County, Michigan; Lake County, Indiana; Fergus County, Indiana; Portage County, Ohio, and Douglas County, Wisconsin. A number of societies have reported that the matter will be considered at the next meeting.

—*Jour. A. M. A.*

TYPHOID FEVER IN 1922.

Our annual summary of typhoid death rates in the large cities of the United States, which appeared last week, shows a continuance of the typhoid decline which has been so striking a factor of the epidemiology of this disease for the last twelve years. The slight interruption to the steady downward curve which occurred in 1921 was more than overcome in 1922, and the truly astonishing rate of 3.15 per hundred thousand has been reached. This is a little less than one sixth of the rate (19.59) for the large cities of this country in 1910. Three cities with an aggregate population of 473,975 were able to report a perfectly clean slate, not a single death from typhoid having occurred within their borders during the calendar year 1922. The main causes of indigenous urban typhoid in the United States at present seem to be contact with typhoid cases and typhoid carriers—a steadily diminishing hazard, occasional cases from a contaminated shellfish, and from bathing in polluted water, and perhaps in some cities, from the improper disposal of excreta. Relatively few cases appear to be caused by polluted drinking-water, by milk supply, or, in the Northern cities, by inadequate sewerage. A considerable, if indeterminate, number of the typhoid deaths that occur in the large cities do not originate in the city itself, but are due either to infection contracted outside or to cases brought in for treatment. It is evident that not much further reduction in city typhoid rates can be expected until a diminution in rural typhoid can be brought about. In 1920, the rural death rate for typhoid, as reported by the Bureau of the Census, was nearly double the rate in the urban population. This condition is more marked in some parts of the country than in others. It is also true that in states with a large negro population typhoid rates are higher among the negroes than among the whites, for the same reasons probably that determine excess of typhoid in rural districts. The most encouraging feature of the whole typhoid situation is that our large American cities are no longer distributing centers of typhoid, black plague spots radiating corruption into the surrounding countryside. The two great agencies of typhoid dissemination, polluted water supplies and raw milk, are largely eliminated, and while cities of from 10,000 to 100,000 population have unquestionably much progress to make, especially in control of the milk supply, the condition in the larger cities for the most part may now be regarded with pride instead of being pointed to with obloquy as awful examples.—*Jour. A. M. A.*

WHY BABIES DIE.

More than 100,000 of the 250,000 children less than one year old who die every year in the United States die from causes connected with their birth, says the U. S. Public Health Service. The need, it adds, for further study and investigation of these causes is urgent.

EACH DOLLAR BRINGS FIVE MORE.

The U. S. Public Health Service reports that the expenditure of $50,000 for rural hygiene work on the co-operative plan in the last fiscal year led to the appropriation of five times as much by states and counties and of a good deal more by private individuals and corporations.

INTRAVENOUS INJECTIONS OF GLUCOSE IN TOXEMIA OF PREGNANCY.

Intravenous injections of glucose for pernicious vomiting of pregnancy, as advocated by Paul Titus and M. H. Givens, Pittsburgh *(Journal A. M. A.)*, in a previous paper, gave results sufficiently uniform and successful to warrant applying the same treatment to other toxemias of pregnancy, eclampsia in particular. Successful results have been obtained by the use of carbohydrates in treatment of vomiting of pregnancy in forty-six cases now reported in addition to the series of seventy-six previously reported. Therapeutic abortion was performed twice; in one of these cases the patient died from acute yellow atrophy of the liver. Immediate clinical improvement in individual patients, as well as a general lowering of the mortality rate in eclampsia, has been noted as a result of the intravenous administration of glucose for this condition. Chorea gravidarum, preeclamptic toxemia, and fulminating toxemia with ablatio placentae have likewise shown favorable results from this treatment. The usual necropsy findings in the liver of patients that have died of any toxemia of pregnancy are distinctly altered if the patient was given an intravenous injection of glucose solution before death. Those portions of the liver lobules which are ordinarily necrotic are thereby restored to a marked degree; and in most instances, a diagnosis of eclampsia or pernicious vomiting of pregnancy, as the case might be, could not be made from an examination of the liver sections alone. The regeneration of the liver cells after injection of glucose, which can be demonstrated pathologically in the fatal cases, at least partially restores the normal functions of the liver, especially in respect to its action as the detoxicating organ of the body. Clinical improvement is usually noticeable within a short time after the injection. From 50 to 75 gm. of chemically pure glucose dissolved in from 250 to 500 c.c. of water may be injected slowly without danger of unfavorable reaction on the part of the patient. Single doses repeated as required are preferable to a continuous flow of solution into the vein. It is thought that the rate of absorption and storage of the injected sugar is an index of the condition of the liver. Glycemia curves plotted from blood sugar determinations at stated intervals after injection of glucose disclose the fact that the sugar is absorbed and stored by some patients more rapidly than in the normal controls, whereas in others the storage is slower than normal. While there may be other factors involved, the liver is the variable of greatest significance or importance among these individuals. A prognosis based on the first curve, therefore, is favorable because this liver may be assumed to have been depleted of glycogen in the course of the toxemia but able to restore itself when given an opportunity, whereas, the slower the rate of storage the more is an actual and extensive liver necrosis with loss of function to be indicated rather than a mere depletion of the cells.

METHODS OF PRECISION IN DIAGNOSIS OF DIABETES.

In the cases cited by Henry J. John, Cleveland *(Journal A. M. A.)*, the condition was diagnosed as diabetes melitus by the patient's physician on the basis that she had sugar in the urine. She was put on a rigidly restricted diet and kept on it until she had lost almost 50 per cent. of her weight; but she still showed sugar in the urine. Further examination revealed that she had a normal blood sugar content; and her ability to utilize carbodydrates—the glucose tolerance test—was demonstrated to be normal by a perfectly normal curve; that is, she was able to utilize all the carbohydrates one could give her. This was strikingly demonstrated later on, when a heavy carbohydrate diet, high in calories as well, failed at any time to bring her blood sugar above the normal level. These findings show clearly that the case was not one of diabetes, in spite of the fact that there was sugar in the urine, but a case of a kidney permeable to sugar, a fairly common condition.

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